

REMARKS

Claims 1, 2, 7, 8 and 21-26 are now pending in the application with the present amendments. Claims 3-6 and 9-20 are canceled by the present amendment. Applicants respectfully submit that the amendments to the claims overcome the rejections made by the Examiner under 35 U.S.C. §112 and that the amendments to the specification and the title overcome the objections. In the Office Action, claims 1-8 were rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 4,786,608 to Griffith ("*Griffith*"). Claims 1-8 were also rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 6,222,253 B1 to Sadana et al. ("*Sadana*"). For the reasons set forth below, Applicants respectfully submit that the presently amended claims are fully distinguished over *Griffith* and *Sadana*. Consideration and allowance of the presently pending claims is respectfully requested.

As amended herein, claim 1 now recites a separation by ion implanted oxide (SIMOX) method of forming a buried oxide layer of a semiconductor-on-insulator ("SOI") substrate. In such method, a base dose of oxygen ions is implanted at least one time at a first energy level into a buried region disposed below a major surface of a semiconductor substrate to form an oxygen-implanted region. A second dose including oxygen ions and/or nitrogen ions is implanted at a second energy level into the oxygen-implanted region while the substrate is maintained at room temperature. The substrate is then annealed to cause the ions implanted by the steps of implanting the base dose and the second dose to be redistributed in the substrate and to react with a material of the substrate to form a buried oxide ("BOX") layer in the buried region. The BOX layer electrically isolates a semiconductor layer of the substrate disposed above the BOX

layer from a semiconductor region of the substrate disposed below the BOX layer.

Neither Griffith nor Sadana, nor the combination of Griffith and Sadana teach or suggest these recited features of claim 1. Griffith merely describes implanting oxygen ions into a region of the substrate to form a "buried silicon dioxide layer" (col. 4, ln. 19), followed by a room temperature implant of preferably silicon ions into an interfacial region of the substrate contiguous to the "implanted oxide" material of layer 13. (col. 4, lns. 44-51) to form an amorphous silicon layer 22. By contrast, as recited in claim 1, the step of implanting a second dose is performed into *an implanted oxide region* formed by a preceding step of implanting the base dose of oxygen ions. In addition, rather than implanting silicon ions, the second dose includes at least one of oxygen ions and nitrogen ions. Such implanted ions *"react with a material of the substrate to form a buried oxide layer,"* as recited in claim 1.

Sadana does not make up for the features that Griffith fails to teach with respect to the presently claimed invention. Sadana describes a method of performing a first oxygen ion implant and then implanting oxygen ions in a room temperature implant to form an amorphous layer "centered about the end of range region" (col. 4, lns. 53-56). However, as recited in claim 1, the step of implanting a second dose is performed into *an implanted oxide region* formed by a preceding step of implanting the base dose of oxygen ions.

Moreover, each of the new claims 21 through 26 presented herein recite additional features which are believed to patentably distinguish them from the references cited by the Examiner.

Support for the present amendments is provided, *inter alia*, at [0022], [0026],

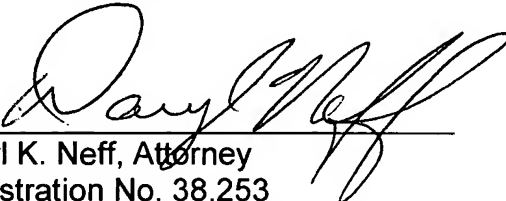
[0030], and [0036].

In view of the amendments and remarks herein, it is believed that all claims of the application are now in condition for allowance. However, if for any reason the Examiner does not believe that such action can be taken at this time, the Examiner is requested to telephone the applicants' attorney at the number indicated below to discuss any issues that may remain.

It is believed that no fee is due in connection with the filing of this Amendment. However, if any fee is due, authorization is granted to debit the Deposit Account No. 09-0458 of the Assignee. If there is an overpayment, please credit the same account.

Respectfully submitted,
Joel P. DeSouza et al.

By:


Daryl K. Neff, Attorney
Registration No. 38,253
Telephone: (973) 316-2612